Cohen-Macaulay differential graded modules and negative Calabi-Yau configurations

Haibo Jin

Nagoya University

Email: d16002n@math.nagoya-u.ac.jp

We introduce the class of Cohen-Macaulay (=CM) dg (=differential graded) modules over Gorenstein dg algebras and study their basic properties. We show that the category of CM dg modules forms a Frobenius extriangulated category, in the sense of Nakaoka and Palu, and it admits almost split extensions. We also study representation-finite d-self-injective dg algebras A in detail. In particular, we classify the Auslander-Reiten (=AR) quivers of CMA for those A in terms of $(-d-1)$-Calabi-Yau (=CY) configurations, which are Riedtmann's configurations for the case $d = 0$. For any given $(-d-1)$-CY configuration C, we show there exists a d-self-injective dg algebra A, such that the AR quiver of CMA is given by C.

References

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